

LORD MILNER. ON SCIENCE AND INDUSTRY.

WE notice with much satisfaction that Lord Milner is a statesman who recognises that scientific knowledge is essential to national progress. In a speech as honorary president of the Chemical, Metallurgical, and Mining Society of South Africa, reported in the *Rand Daily Mail*, Johannesburg, of March 28, he declared himself strongly in favour of generous expenditure upon science, and the utilisation of the services of scientific men for the development of industries. The following extracts from his address will be read with interest by all men of science:—

There is one form of expenditure which is sometimes called extravagance which is not extravagance, and that is expenditure in getting the very best scientific advice. Whatever expenditure we may curtail in the future, there is one form of expenditure which I hope we shall never curtail, and that is the expenditure upon science. And if, as I believe, in the course of a few years you find a great improvement in the agricultural conditions of this country, which means an enormous change in the economic position, greatly benefiting, among others, the mining industry, that change will have been due to the fact that from the first moment almost of ordered administration in this country after the war we sought to get the best scientific advice in all branches of agriculture in different parts of the world, a matter which does not lead to any immediate change, or to any sudden or astonishing results, but which, I believe, in course of time will be found to have been the most profitable investment possible.

The same principle applies to industry as it does to agriculture—perhaps in a higher degree you may say to industry; but then industry here always has had it from its beginning—the benefit of first-rate scientific assistance. I mean that the immediate advantages resulting from the scientific treatment of the great industry of this country have been so enormous, so obvious, that from the first moment that capital flowed into the country to develop its buried resources, the aid of science has been called in. Science in the industry has not required that Governmental support and impetus which it does require in the more neglected branches of our public economy, such as agriculture. Science has always been present in the development of the great industry of this country through the fact that the capitalists who have put their money into it have recognised from the first its supreme importance. But although private enterprise has done with relation to mining a great deal which, with regard to agriculture, for instance, only the State could do, there still remains something which the State can do even for the highly developed and highly scientific industries of this country. It can do something, and I hope it has already begun to do something.

I believe we should all agree that it is not enough that this great centre of mining industry should be able to attract, as it does, the highest ability, the highest scientific ability, from different parts of the world. We want to do something more than this; we want to grow it for ourselves. And we look forward to the time when Johannesburg will have, among other things, a mining school which shall be the first in the world, and it shall have, I hope, after that, in time, a university and a teaching university—not only confined to science—comprising science and the arts—but of which the scientific faculties will be the most eminent known to mankind. Now, you may say that is rather high-faluting and it is looking a long way ahead. It may be high-faluting, but it is my honest belief that this thing can be accomplished, and it is my intention—I am sure it is the intention of the Government, so far as our humble powers and abilities go—you know our resources at the present time are not the greatest—to do as much as we can to begin the foundations of those great institutions of the future.

This is a welcome expression of belief in the importance to the community of scientific study and organised knowledge. Only on these foundations can a country be raised from a raw state of nature to a highly-developed civilisation, or a great nation satisfy the demands of the present day.

NO. 1800, VOL. 69]

NOTES.

A PROVISIONAL programme of the meeting of the International Association of Academies, to be held in London at Whitsuntide, has been sent to the delegates appointed to attend the assembly. The following are among the arrangements announced, but they are subject to modification in detail according to the circumstances which may arise between now and the date of the meeting. On Tuesday, May 24, the commission inquiring into the anatomy of the brain will probably meet at Burlington House in the morning. In the evening the delegates will be entertained by the Royal Society at a banquet at the Whitehall Rooms. Wednesday, May 25, and the morning of the following day will be devoted to the business of the assembly. His Majesty the King has expressed his wish, if his engagements will permit, to receive the delegates, and it is hoped that arrangements may be made for this event in the afternoon of May 26. On Friday evening, May 27, the delegates are invited to a reception by the University of London; and on the afternoon of May 28 it is proposed to pay visits to the Universities of Oxford and Cambridge. On Monday, May 30, the Lord Mayor of London will entertain the delegates at a banquet at the Mansion House.

LORD AVEBURY has been elected president of the Society of Antiquaries; and Sir Guilford L. Molesworth has been elected to succeed Sir William White as president of the Institution of Civil Engineers.

A SUBCOMMITTEE has been appointed by the council of the Library Association to consider the question of the "deterioration of modern binding leathers," and to suggest a remedy. A circular is being issued to the chief libraries in the United Kingdom with the view of ascertaining, among other matters, what effective support is likely to be forthcoming from librarians in favour of leathers of the standard specified by the Society of Arts' committee.

THE *Times* correspondent at Rome announces that an archaeological undertaking of an important character is about to be set on foot, namely, the complete excavation of Herculaneum. It is proposed that this vast work should be carried out by the cooperation of Italy with all civilised countries, and that there should be a central managing committee in Rome with national committees elsewhere.

ON Tuesday next, May 3, Mr. L. Fletcher, F.R.S., will deliver the first of three lectures at the Royal Institution on meteorites. The Friday evening discourse on May 6 will be delivered by Dr. Chalmers Mitchell on anthropoid apes, and on May 20 by Prof. Rutherford on the radiation and emanation of radium.

AN International Engineering Congress, under the auspices of the American Society of Civil Engineers, will be held at the St. Louis Exposition during the week of October 3 to 8. The congress will be one of a series of international scientific congresses to be held at the exposition under the general authority and with the cooperation of the Director of Congresses.

ON April 23 and 24 the Society of German Ironmasters celebrated at Düsseldorf the completion of the twenty-fifth year of its existence, and also of the twenty-fifth year of the presidency of Mr. Carl Lueg. The society is in a very flourishing condition. It numbers 2957 members, and of its journal, *Stahl-und-Eisen*, every fortnight 4900 copies are published. The meeting was well attended on both days, about eight hundred members being present.

On April 23 papers were read by Mr. Boveri, on the steam turbine, and by Mr. R. M. Daelen, on the continuous open-hearth process. On April 24 Mr. E. Schrödter traced the progress of the German iron trade during the twenty-five years of the society's existence. The announcement was then made that a gold medal had been instituted, to be called the Carl Lueg medal, and to be awarded for conspicuous services to German metallurgy. The first award was made to Mr. Lueg. Congratulatory addresses were then delivered by representatives of the Government and of numerous kindred societies. The Iron and Steel Institute was represented by a deputation of the council consisting of Mr. A. Tannett-Walker, Mr. A. Greiner, and Mr. B. H. Brough. In presenting the illuminated address from the institute, Mr. Tannett-Walker made a graceful reference to the hospitality received from the German society in 1880 and in 1902, and read a characteristic letter of congratulation sent by Mr. Carnegie.

M. DE FONVIELLE writes:—The fourth congress held by the International Committee of Scientific Aërostatics will be held at St. Petersburg from Monday, August 29, to Saturday, September 3. Prof. Hergesell has sent an intimation of the congress to the various delegates of France, Italy, Austria, and England. The official invitations will be sent through the Russian Foreign Office, in the name of the Imperial Academy of Sciences, which is to make arrangements for the meetings. The object of the conference, as resolved at the Berlin session, is to establish a permanent office with a regular budget paid by the various Governments, similar to the Berne bureau for telegraphy and that at Paris for meteorology. The bureau of the commission is controlling the monthly ascents which are taking place at about fourteen different stations situated in France, Germany, Russia, Austria, Switzerland, Spain, and Italy. Kite ascents are taking place at Boston and in England. The results are discussed regularly in a special publication, frequently noticed in *NATURE*, printed at the expense of the German Government, which has spent for this purpose not less than 18,000 marks, and will continue its work up to the end of the forthcoming meeting.

THE first German congress for experimental psychology was held in Giessen on April 18–21. About 130 persons accepted the invitation to attend the congress, including most of the prominent psychologists of Germany, besides physiologists, philosophers, alienists and teachers attached to various institutions, and about one hundred attended the sittings. Nearly fifty papers were read and discussed, and in order to get through this large programme the sittings were continued far into the evenings. There was an excellent exhibition of apparatus arranged by Dr. Sommer, the distinguished professor of psychiatry, who has done so much to apply the methods of experimental psychology to the investigation of mental diseases. Prof. G. E. Müller, of Göttingen, so well known for his accurate investigations of the memory, presided over the sittings, and one of the most interesting features of the congress was his demonstration and exposition of a case of exceptionally good memory. The subject, who is an intelligent and well educated man, has, in addition to a remarkable memory, principally visual in type, a power of seizing very rapidly various arithmetical relations between groups of figures presented to him, and this combination of faculties enables him to excel all the achievements of Diamanti, Inaudi, and the other "arithmetical prodigies" that have been investigated from time to time. It is proposed to institute a German association for experimental psychology for the

organisation of annual congresses and of cooperative research.

SIR WILLIAM WHITE, the president of the Institution of Civil Engineers, and a number of other engineers and persons interested in the manufacture and uses of steel, paid a visit on April 20 to Hadfield's Steel Foundry at Sheffield. The object of the visit was to inspect the processes adopted and to enable the visitors to acquaint themselves with the work carried on by the Hadfield Company. The *Times* of the following day published an appreciative description of the enterprise exhibited by the company in numerous directions. In this report great prominence is given to the value placed by the Hadfield Company upon scientific laboratory research and upon experimental tests, and this part of the article in particular deserves to be read widely. As the *Times* says, "Abroad manufacturers have been quick to recognise the need for a fully staffed and equipped research department, and the amounts expended annually for this purpose in some foreign works appear almost incredible. It is only by enterprise of this nature, however, that manufacturers can keep in the van of progress, and, properly directed, this so-called 'non-productive' expenditure brings a rich reward. In Great Britain we have been somewhat apt to relegate research work to the laboratories of professors, the manufacturers devoting themselves to what are styled 'practical results.' This divorce of practice and theory does not lead to industrial success." We hope with Sir William White soon "to see the time when the example of Mr. Hadfield will be more widely followed in this country, and when inquiries, both scientific and practical, will be carried out on a very large scale in the works of manufacturers all over the country."

THE Weights and Measures Committee of the Herefordshire County Council has had under consideration the Bill introduced in the House of Lords early this session to provide for the introduction of the metric system into this country. The committee does not recommend the County Council to support the Bill. The report states that the committee is of opinion that the subject is so difficult and important that it should be dealt with by the Government of the day and not by private legislation; that as it stands, the Bill does not attempt to meet the serious inconvenience and expense necessarily attendant upon the compulsory adoption throughout the country of metric weights and measures; that the decimalisation of our coinage is as important as that of our weights and measures, and that either without the other is robbed of more than half its value. At the same time the committee believes that well drawn up and well thought out measures dealing with the metric system and with the coinage, and brought in by the Government, would command the confidence of the country, go through Parliament by a large majority, and ultimately benefit both our home and foreign trade. "We lag far in the rear of all civilised nations on these questions," to quote the report, "and all that is wanted, to remove from us the stigma of marching a century behind the rest of the world, is skilful and thorough treatment of them by the Government of the day."

AN address delivered by Dr. R. T. Glazebrook on April 21 as president of the Optical Society is printed in the *Optician and Photographic Trades Review*. Dr. Glazebrook pointed out that the success of German manufacturers of optical and other scientific instruments is due to the fact that the value of science as a commercial factor is more fully realised there than with us. What the Optical Society has to do in order to advance the industry which it

represents is to promote cooperation among manufacturers, technical education of opticians and standardisation, or the application of scientific methods and standards to organisation and the checking of optical work. In Germany a large proportion of recent progress is due to the stimulating and helpful influence of the Reichsanstalt. Dr. Glazebrook hoped that in a few years' time a future president of the Optical Society would be able to say, when reviewing the progress of the optical trade, that a large proportion of the advance was due to the work of the National Physical Laboratory.

THE report of the Meteorological Council for the year 1902-3, recently presented to Parliament, has now been issued. The work of the Meteorological Office is briefly summarised under (1) ocean meteorology; collection and discussion of data from all parts of the ocean, and the loan of instruments to the Royal Navy and Mercantile Marine. The total number of instruments of all kinds issued during the year for the use of the Navy and Mercantile Marine was more than 1700. Barometers are also supplied to fishing stations; the total number of these instruments on loan was 229 at the end of the year in question. (2) Weather telegraphy; collection of telegraphic observations three times a day from selected stations in the British Isles and Europe, the issue of daily weather reports, weather forecasts, and storm warnings, also of special forecasts for agriculturists during hay and corn harvests (June to September). (3) Climatology; collection and publication of observations from observatories and land stations in the British Isles and British possessions. (4) Miscellaneous investigations; e.g. work in connection with an inquiry into London fog, and a statement of the conspicuous features of the weather during the year, including the readings of anemometers amounting to or exceeding a velocity of 44 miles per hour, corresponding to an estimated wind-force of 9 by Beaufort's scale. To this latter subject a special appendix is devoted. All the branches of the office are utilised for the preparation of replies to numerous inquiries by public bodies, newspaper reporters and private persons. The report shows greatly increased activity in all branches; special mention may be made of the supply of weekly and quarterly returns for the Registrar General's reports, and of the collection and publication of observations from foreign and colonial stations. Notwithstanding the increase of work, the funds at the disposal of the Meteorological Council remain stationary. The perusal of the report clearly shows that the useful operations of the office are to a considerable extent crippled by the want of sufficient means to carry on the work of a practically important public department on the lines followed by some of the foreign meteorological offices, and to enable it to fulfil the constantly increasing requirements of the service in this country.

IN the *Bulletin de la Société d'Encouragement* M. J. Pillet presents a report on the "Little" universal drawing instrument submitted by Commander Mahon, of the U.S. Federal Army. The instrument consists essentially of two jointed parallelograms or frames, by means of which a piece called the turning plate can be shifted from one part of the diagram to another without rotation. Pivoted to this portion are two rulers at right angles, which by means of a scale of degrees can be rotated through any desired angle, and these rulers have scales by which any desired length can be measured off. The advantages of the apparatus for quickly drawing force-diagrams for engineering purposes are obvious from the illustration accompanying the paper.

STEPS are being taken to promote public instruction in silk-culture on a modern scientific basis in America, and accordingly a special *Bulletin* (No. 39) has been issued by the Entomological Division on the culture and life-history of the silkworm and its moth.

A REPORT, published at Birmingham, on injurious insects and other animals observed in the midland counties during last year has been drawn up by Mr. W. E. Collinge, of Birmingham University. It is well illustrated, and contains much valuable information for farmers and gardeners. Future annual reports are promised.

THE Boston Natural History Society is preparing complete lists of the fauna of New England, of which the first part, containing the reptiles, has been issued in *Occasional Papers*. These lists are to prepare the way for a complete illustrated monograph of the fauna which the society proposes to publish.

A PAPER dealing with noxious insects is published in the *Boletim* of the Goeldi Museum under the title of "Os Mosquitos no Pará." The author, Prof. E. Goeldi, directs special attention to *Stegomyia fasciata* and *Culex fatigans*, and is desirous of obtaining information as to their range and habits from all parts of the country. The former species, at any rate, is believed to have been introduced from Africa. Many experiments are recorded as to the infections produced severally by these species, of which the first is diurnal and the second nocturnal.

THE April number of *Bird Notes and News* contains a reference to various rare birds—including an avocet, bustards, and waxwings—which have lately visited our islands, and have mostly shared the usual fate of such wanderers. The need for effectual legal protection (if such could be devised) for rare birds of this type is emphasised, but it is pointed out that even were such birds made Crown property, as has been suggested, this would not help the case of locally rare species.

AN important place was assigned at the fifteenth annual meeting of the Association of Economic Entomologists, held at Washington in December, 1902 (of which the report appears in No. 40 of the *Bulletins* of the Entomological Division of the U.S. Department of Agriculture), to a survey of the literature of the subject published in the States, and to a discussion of the best means of bringing the work of the division to the notice of those sections of the public more especially concerned. It was suggested that newspaper articles, leaflets, somewhat larger popular bulletins treating of particular species or groups of species, and larger popular monographs seemed the best means for attaining the end in view.

TO the April number of the *Independent Review* Dr. A. R. Wallace contributes the first part of an article on "The Birds of Paradise in the Arabian Nights." In the introductory paragraphs the author states that he is generally disposed to believe in the truth of popular legends connected with natural history, the assertion that vipers swallow their young being a case in point. Accordingly he is predisposed to look with favour on the theory that the "Islands of Wak-Wak" mentioned in the "Arabian Nights" are really the Aru Islands, and that they take their name from "wawk-wawk," the cry of the great bird-of-paradise. The portion of the article contained in the issue before us deals only with the identification of the locality to which "the bride with the feather-dress" was brought with the south-eastern lower slopes of the Elburz Moun-

tains. We shall await with interest Dr. Wallace's proofs that "Hasan" actually visited the home of the birds-of-paradise.

Two zoologists have apparently been working synchronously and independently of one another on the same subject—the anatomy and development of *Amphilina foliacea*, the tape-worm infesting the sterlet—and the results of their investigations appear in the current issue of the *Zeitschrift für wissenschaftliche Zoologie* (vol. lxxvi. part iii.). Both writers, Dr. L. Cohn and Dr. W. Hein, take up the subject as left by Salensky, and both are of opinion that his conclusions require emendation. Two papers on the histology and morphology of insects likewise appear in the same issue. In the one Mr. W. Plotnikow, of St. Petersburg, discusses the integument and certain peculiar structures found therein, while in the second Mr. N. Holmgren, of Stockholm, commences a series of articles dealing with the morphology of the head, commencing with that of the *Chironomus* larva, as displayed by the periodical moults.

WE have received the March and April numbers (Nos. 3 and 4, vol. ii.) of the *Journal* of the Royal Army Medical Corps. The *Journal* is now edited by Colonel David Bruce, F.R.S., R.A.M.C., and maintains the high standard of the earlier parts. Among other articles of interest may be mentioned "para-typhoid infections," by Lieut.-Colonel Firth, R.A.M.C., cases of dum-dum fever by various writers, an illustrated description of the new Royal Army Medical College by the commandant, various clinical and editorial articles, and corps news, &c.

THE report of the director (Lieut.-Colonel Semple, R.A.M.C.) of the Pasteur Institute of India (Kasauli) for the third year, ending August, 1903, has recently been issued. The inoculations for bites of rabid animals numbered 584, of which 6 were failures, a percentage of 1.02. In addition to the inoculations, experiments are in progress in order to obtain an anti-rabic serum, and the preparation of anthrax vaccine and of antivenene for snake bites has been undertaken. Various bacteriological examinations have also been carried out, the report showing that a great deal of valuable work has been accomplished. Attention is directed to the climatic difficulties that have to be surmounted, especially the liability to septic infection of the material used for the anti-rabic inoculations.

A SMALL collection of Mycetoza gathered in the Botanical Gardens, Tokyo, is described by Mr. A. Lister, F.R.S., and Miss Lister in the *Journal of Botany* for April. Several of the species are found in Great Britain and Europe, but one, *Erionema aurum*, which has affinities with the genus *Physarum*, has only been recorded once previously, and then from the Buitenzorg Gardens in Java.

EXPERIMENTS conducted by Mr. M. Kanda, and recorded in the *Journal* of the College of Science, Tokyo, on the influence of very weak solutions of certain poisonous salts applied to water- and pot-cultures of flowering plants agree with the effects produced by similar salts on cryptogamic plants. A percentage appreciably less than the minimum poisonous solution in several cases stimulated the plant to accelerate its growth and increase in weight. The effect was most marked when a 5×10^{-8} gram molecule solution of zinc sulphate was added to the water-cultures.

IN an account of the fibre plants which grow wild or are cultivated in the Hawaiian Islands, Mr. L. G. Blackman,

of the Bernice Museum, in Honolulu, attests the value of the indigenous plant, *Touchardia latifolia*, which furnishes the fibre known as oloná. The plant is not common, and thrives best in woods at a moderate altitude. The fibre has been requisitioned for climbing ropes on account of its great tenacity. At present the cultivation of fibre yielding plants in these islands is practically limited to sisal hemp, but the writer suggests that the climate is suitable for growing *Sansevieria zeylanica*, which furnishes bow-string hemp, and *Furcraea gigantea*, the source of pita fibre.

WRITING in the *Botanical Gazette* upon the morphology of the common American water-weed, *Elodea canadensis*, Mr. R. B. Wylie gives an account of the development of the floral parts, and describes the details of pollination and fertilisation. The staminate flowers are at first submerged, but owing to the accumulation of bubbles of gas in the closed flowers, they break off and rise to the surface. The pollen grains are kept afloat by the air which is held round the spines. In the pistillate flower the ovary is situated at the base of a long floral tube; the stigmas curve out well over the floral envelopes, and since they are not readily wetted, they cause a depression in the surface film of the water into which the pollen grains are drawn, and so come into contact with the stigmas.

THE whole of the fourth number of vol. iv. of the *West Indian Bulletin* is devoted to information relating to Sea Island cotton in the United States and the West Indies. As the West Indian islands are considered to be specially suited for the cultivation of the Sea Island variety, the very finest and most expensive product on the market, the object of the Agricultural Department is to encourage its general introduction to the exclusion of the commoner and cheaper sorts. It is important, therefore, that the colonial cultivators should be in possession of the most trustworthy information to guide them in the re-introduction of the cotton industry. With this object in view Sir Daniel Morris, accompanied by Mr. J. R. Bovell, visited the Sea Island cotton regions of South Carolina, Georgia and Florida some months ago, and obtained, at first hand, a mass of facts bearing upon every phase of the business, from the nature of the most suitable soil to the final disposal of the cotton on the market. In addition to the report on the visit to the States, the number contains valuable notes on the various pests which injure the cotton plant in the West Indies, on the ginneries already established in the islands, on the cost of production, on the prices realised on the home markets, and so on.

A DESCRIPTION of the topography and geology of the Baharia Oasis, in the Libyan desert, has been prepared by Dr. John Ball and Mr. H. J. L. Beadnell (Survey Department, Public Works Ministry, Cairo, 1903). This oasis is a large natural excavation in the great Libyan plateau, and is entirely surrounded by escarpments of Upper Cretaceous limestones and sandstones, with thin cappings of Nummulitic limestone (Eocene). The grey limestone and white chalk of the Danian form the prominent upper scarps, while the oldest strata are represented by the Nubian sandstone, partly Cenomanian and partly Senonian. The greatest length of the oasis is 94 kilometres, and its greatest width about 42 kilometres. Within the excavated area there are many isolated hills, some capped by white limestone, others by (? Oligocene) dolerite and ferruginous quartzites. The lowest part of the oasis is 113 metres above sea-level, and the floor consists of sandstones and clays strewn with rock fragments. There the springs occur and also the villages.

Partially dried salt areas are to be observed, with glittering incrustations of salt, and sand-dunes likewise diversify the scene. The authors give details of the stratigraphy and palæontology. They note that the Danian is overlain unconformably by the Eocene, between which disturbances with faulting and denudation took place. In post-Eocene times there were further earth movements accompanied by the igneous intrusions. It is not clear, however, whether these disturbances were prior or subsequent to the deposition of the ferruginous quartzites. These latter were formed in a slight depression of the Eocene and Cretaceous rocks before the great erosion of the oasis. The authors remark that the agent of denudation cannot be stated with certainty. The effects of the disturbances had weakened the rocks, and the main erosion was carried out in the moist climate which existed in Egypt in Pliocene and early Pleistocene times, and is being continued to-day by the powerful agency of the desert wind-borne sand and changes of temperature.

A FIFTH edition of Mr. W. Jerome Harrison's "Text-book of Geology" has been published by Messrs. Blackie and Son, Ltd. The book has been revised and brought up to date, and many new illustrations have been used to embellish its pages.

MESSRS. WHITTAKER AND CO. have published the *School Calendar* for 1904. It is a convenient and useful guide to the scholarships offered by the universities, public schools, and other educational institutions. Full particulars of the public examinations to be held during the current year are also given.

THE April number of *Cassell's Magazine* opens with a well illustrated description of the Royal Botanic Gardens at Kew, written by Mr. Richard Davey. An illustrated article on radium and its possibilities, by Dr. Louis Elkind, is also included in the same issue.

MR. J. W. JARVIS, St. Mark's College, Chelsea, S.W., has undertaken the duties of secretary and treasurer of the London Geological Field Class. The excursions this season are to Merstham on April 30, and to Purley, Henley, Wimbledon, Aylesford, Leighton, Bedford, and Chislehurst on succeeding Saturdays.

THE Department of Agriculture and Technical Instruction for Ireland has published the second *Bulletin* in its science and art series. The pamphlet deals with the spectrometer: its construction, adjustments, and uses, and is written by Mr. W. J. Lyons, of the Royal College of Science for Ireland.

WE have received a copy of the *Chemisch Weekblad*, a new weekly publication of the Dutch Chemical Society, under the editorship of Dr. L. T. Reicher and Dr. W. P. Jorissen.

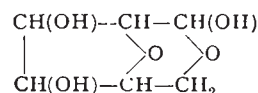
A PRIZE of 1200 marks is offered by Prof. J. H. van 't Hoff for the collection and systematic arrangement of all the literature bearing upon catalytic phenomena. Competitors for the prize are required to send in their manuscripts before June 30, 1905, to the Redaktion der *Zeitschrift für physikalische Chemie*, Leipzig, Linnéstrasse 2. The award will be decided by Profs. van 't Hoff, Arrhenius and Ostwald.

In the *Journal of Physical Chemistry* Miss Clara C. Benson directs attention to an interesting reaction, the rate of which is diminished by raising the temperature. The

reaction in question is the liberation of iodine from potassium iodide by chromic acid in presence of ferrous sulphate. The only reactions previously studied which have a negative temperature coefficient appear to be those in which a colloidal catalytic agent is involved, and the decrease of velocity with rise of temperature is in these cases probably due to the coagulation of the colloid.

THE mode of action of the oxides of nitrogen in the oxidation of sulphur dioxide in the lead chamber process is discussed in a detailed manner and from a physico-chemical standpoint by Dr. Trautz in the current number of the *Zeitschrift für physikalische Chemie*. It is pointed out that although the theories of Lunge and of Raschig throw considerable light on the reactions involved, yet the problem can by no means be regarded as solved. According to the author's experiments the essential reactions involved in the lead chamber process all take place with such large velocities that their nature cannot be determined with the aid of modern criteria.

IN the *Zeitschrift für Farben- und Textil-Chemie*, vol. iii. p. 97, Prof. A. G. Green discusses the question of the constitution of cellulose. It is pointed out that the grounds for the assumption that cellulose must have a large molecular weight are insufficient, and the simple formula $C_6H_{10}O_5$ seems more probable. As representing the constitution of this important body, the formula



is suggested. According to this, cellulose is an inner anhydride of glyucose, and the formation of the latter on hydrolysis is thus easily explained. The formula, moreover, accounts for all the principal reactions, for the formation of the trinitrate and triacetate, for the production of ω -bromo-methylfurfural by action of hydrobromic acid, and also explains its latent aldehyde character.

THE additions to the Zoological Society's Gardens during the past week include two Cheetahs (*Cynaelurus jubatus*) from Africa, presented by Colonel B. Mahon, C.B., D.S.O.; a Lesser Black-backed Gull (*Larus fuscus*), European; a Royal Python (*Python regius*) from West Africa, presented by Mr. E. W. Wildeblood; a Goshawk (*Astur palumbarius*), European, presented by Major-General Kinloch; two Roseate Cockatoos (*Cacatua roseicapilla*) from Australia, presented by Mr. T. J. Kynnersley; a Western Slender-billed Cockatoo (*Licmetis pastinator*) from Western Australia, presented by Miss Newbold; four Moorish Geckos (*Tarentola mauritanica*) from North Africa, five European Tree Frogs (*Hyla arborea*), a Common Toad (*Bufo vulgaris*), European, presented by Mr. F. M. Davis; four Common Vipers (*Vipera berus*), European, presented by Mr. G. E. Bon Bernais; a Suricate (*Suricata tetradactyla*) from South Africa, four Crowned Cranes (*Balearica pavonina*) from West Africa, a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, three Madagascar Porphyrios (*Porphyrio madagascariensis*) from Madagascar, two Antarctic Skuas (*Stercorarius antarcticus*) from Antarctic Seas, two Yellow-vented Parrakeets (*Psephotus xanthorrhous*) from Australia, deposited; two Natal Duikers (*Cephalophus natalensis*) from South-east Africa, five Rose-coloured Pastors (*Pastor roseus*) from India, purchased; five Fat-tailed Desert Mice (*Pachyromys depressi*), born in the Gardens.